



User Manual



Code Reader 2.0TM

Manual Version 18

Release Date: 3/24/09

This version of the manual released with firmware version 4058.



C001537_18_CR2_User Manual

Statement of Agency Compliance



The CR2 has been tested for compliance with FCC regulations and was found to be compliant with all applicable FCC Rules and Regulations.

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, this device must not be co-located or operate in conjunction with any other antenna or transmitter.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



The CR2 has been tested for compliance to CE standards and guidelines and was found to conform to applicable CE standards, specifically the EMC requirements EN 55024, ESD EN 61000-4-2, Radiated RF Immunity EN 61000-4-3, ENV 50204, EFT EN 61000-4-4, Conducted RF Immunity EN 61000-4-6, EN 55022, Class B Radiated Emissions, and Class B Conducted Emissions.

The CR2 can be set to use targeting lasers. The CR2's targeting laser emits Class 2M radiation outside of the product per IEC 60825-1. Class 2M Laser/LED product. Do not stare into beam or view directly with optical instruments.

The CR2 has been tested by an independent electromagnetic compatibility laboratory in accordance with the applicable specifications and instructions.

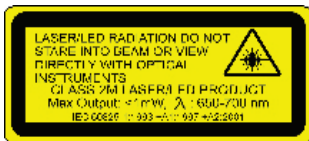


Laser/LED Radiation

Wavelength: <1mW
Maximum Output: 650-700 nm
Laser Pulse Duration: 0.977 mSec.
LED Pulse Duration: 0.255 uSec.



Laser aperture



Enlarged for readability

A Warning Label (see left) is located on the underside of the CR2 near the battery locking mechanism as pictured (see right).



Enlarged for readability

Code voids product warranty if the hard case has been opened or tampered with in any way. Opening the case may put the user at risk of laser radiation exposure (Class 3R). A second Warning Label (see left) is placed within the casing structure as pictured (see right).

Caution – Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

In addition, a CB Test Certificate has been issued by the National Certification Board (NCB) indicating Code Reader 2.0 (CR2) meets all safety and quality standards in accordance to IEC 60950-1:2001, First Edition.



Code Reader 2.0 User Manual

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The Code Reader software uses the Mozilla SpiderMonkey JavaScript engine, which is distributed under the terms of the Mozilla Public License Version 1.1. Source code for this version of Spider Monkey is available at:

<http://www.codecorp.com/source/spidermonkey>.

The Code Reader software is based in part on the work of the Independent JPEG Group.

Code Corporation, 14940 S. Pony Express Road, Suite 500, Bluffdale, UT 84065

www.codecorp.com

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Chapter 1 - Getting Started

1.1 - Introduction

CR2 is a revolutionary bar code and 2-dimensional code reader. Developed to be the first universal reader, no other single device performs as many functions. With a cost of ownership far less than comparable systems, the CR2 incorporates a unique dual path optical system, a 1.3 million pixel CMOS sensor, and a 400 MHz processor. This combination has created a reading system that supports:

- **High density matrix codes and larger low density linear codes**
- **Superior working range**
- **High-speed omni-directional decoding**
- **Cordless and cabled interfaces**
- **Unsurpassed data read rates**



The CR2 sets a new benchmark for size and weight. It is smaller and lighter than comparable systems yet can withstand multiple drops to concrete. It is the only product available in batch, cabled or wireless formats; handheld, ruggedized cabled or battery handle use-case scenarios; and lanyard hook attachment or reader stand form factors. The cordless version utilizes the latest Bluetooth™ class 1 radio with a 300 foot operating range. The CR2 is rugged and lightweight and the cordless version will operate for more than a complete shift at the highest use rate. The CR2 performs more than 11,000 reads and transmits from a single battery charge. The CR2 will automatically discriminate between all major 2-D matrix and linear bar code symbologies and features a timestamp feature for logging data.



Whether you need a small, palm-held device or a traditional gun, CR2 was specifically developed so users may easily choose the device that best meets their needs. The CR2 is available in three basic configurations:

1. **CR2 Cabled** - USB, RS-232 or PS/2 interfaces
2. **CR2 Batch** - Store and forward device with memory and long-life battery
3. **CR2 Cordless** - Long life battery and Bluetooth radio

1.2 - Unpacking

Remove the imager from its packing and inspect it for damage. If the scanner was damaged during shipping, please call Code at (801) 495-2200.

The standard CR2 unit is shipped with a USB cable interface. The unit also features a battery blank which must be installed when using the reader (except when attached to the H2, BH1 or BH2 handle).

Various accessories are available for the CR2.

- 4 cable options (USB 6ft., USB 12 ft., RS-232 or PS/2)
- 1950 mAH long-life Lithium-Ion battery
- Class 1 Bluetooth radio with 300 foot operating range (shorter ranges available)
- Clip-on pistol grip handle
- Ruggedized Cabled Handle
- Battery Handle (in two battery sizes)
- External single-bay and two-bay battery charger
- CodeXML Bluetooth modem
- Protective Elastomer Boot
- Protective Case Cover or Holster
- Power Supplies: US/Europe/SA/UK/Asia
- Reader Stand
- Lanyard Hook attachment option

Please keep your packing materials. The CR2 is shipped in an approved shipping container and should be used if you ever need to return your equipment for servicing.

1.3 - Reader Battery Installation

Attaching and Detaching the Lithium Ion Battery

The CR2 has an option to include a 1950 mAH Lithium Ion battery. To install battery, make sure the battery is in the correct position (figure 1.1). Place the plastic tab of the battery into the reader (figure 1.2). Push the battery in and slide the locking mechanism down (figures 1.3)

Charging the Lithium Ion Battery

The battery automatically charges everytime a USB or Powered RS-232 cable interface is attached to the unit and the host is powered up.

Note: The RS-232 interface power adapter must be plugged into a wall socket for the unit to charge.

If you power-up the CR2 with a completely discharged battery it will take up to 10 minutes before the unit will become operational.



Figure 1.1



Figure 1.2



Figure 1.3



1.4 - Attaching Handles

H1 - Handle

1. Place the CR2 in the cradle of the handle and slide the unit back (Figure 1.4). Be careful not to place fingerprints on the front glass when attaching handle.
2. Once the 8-pin DIN connector of the handle begins to enter the opening in the back of the unit, firmly press the unit back until the unit is flush against the handle (Figure 1.5).



Figure 1.4



Figure 1.5

H2 - Ruggedized Cabled Handle

1. Make sure the reader has no battery or battery blank installed.
2. Insert the reader's 8-pin DIN connector into the flexible connector at the back of the H2 handle (Figure 1.6).
3. The reader 'snaps' onto the H2 handle utilizing the battery compartment.
4. The reader can be further secured to the handle with two threaded screws through the flexible connector and two more threaded screws on the underside of the reader and handle (Figure 1.7).

BH1 or BH2 Battery Handle

1. Make sure the reader has no battery or battery blank installed.
2. Insert the tab on the back of the BH1 or BH2 Handle into the reader's recessed slot typically utilized to secure the battery in place on the reader (Figure 1.8).
3. The reader 'snaps' to the handle utilizing the battery compartment (Figure 1.6). The reader will 'quick release' from the handle to accommodate quick and easy battery charging.
4. Optionally, the reader can be further secured to the handle with two threaded screws on the underside of the reader and handle (Figure 1.7).



Figure 1.6

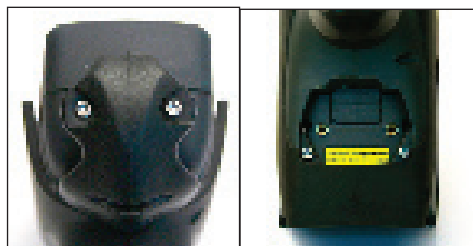


Figure 1.7



Figure 1.8



1.5 - Batch Operation

1.5.1 - Introduction

The CR2 unit features a batch mode for applications requiring a portable reader. Batch mode allows a user to store scanned data to the reader's non-volatile memory. The user may transfer the data to a host computer when needed. To utilize batch functionality you will need to purchase the 1950 mAH Lithium Ion battery from a Code representative.

The CR2 may be programmed to operate in three different batch modes:

1. *Send & Buffer Mode (Default)* - In Send and Buffer Mode, the CR2 unit will automatically detect when the USB or RS-232 cable is detached, or the Bluetooth® radio is out of range, and will switch into batch mode and buffer the data in non-volatile memory. When the reader is reconnected to your host computer, or when the Bluetooth Radio is back in range, the reader will auto transfer the buffered data. Once transferred, the data is automatically erased from the reader's memory.

Note: Once a unit is reattached to a cable or enters within radio range, any data scanned WILL NOT be saved to the non-volatile memory. For RS-232, a power supply connection is used to detect when a reader is attached to a host computer.

2. *Log Only Mode* - In Log Only Mode, the reader will only store data into non-volatile memory. You can only retrieve the data by scanning the Transfer All Stored Data in Memory code (see explanation next page). Once the reader's memory has been transferred to a host computer, all of the data will still reside in memory. A user must scan the Delete Scanned Data from Memory code to clear memory.
3. *Send & Log Mode* - In Send and Log Mode the reader will save a copy in non-volatile memory as well as send the data if the reader is connected. The data can be retrieved by scanning the Transfer All Stored Data in Memory code or the Transfer Only Unsent Data in Memory code (see explanations next page). Once the reader's memory has been transferred to a host computer, all of the data will still reside in memory. A user must scan the Delete Scanned Data from Memory code to clear memory.

Note: The reader can be defined as connected if:

- 1) The Bluetooth radio is in range;
- 2) The USB cable is attached to a host and the reader is enumerated;
- 3) The reader is in RS-232 Cabled - No Power mode; or
- 4) The RS-232 cable is attached to host with power supply and the reader is in RS-232 Batch-Cable Detect (Default) mode.

The CR2's dedicated batch memory is a minimum of 1MB. To determine the number of reads that may be stored, divide the average bytes of a scan into the total minimum memory.

Feedback

After a successful decode in batch mode, the unit will beep once and the memory LED will flash either red or amber depending on memory level, and every 15 seconds the battery LED will flash green, amber or red depending on the battery level. This feedback behavior is accurate when a reader is cabled or uncabled.

Transferring and Deleting Data

There are three different codes to transfer and delete data in memory.

1. *Transfer All Data in Memory* - This code will send all data in memory everytime the code is scanned.
2. *Transfer Only Unsent Data in Memory* - This code will send only the data in memory that hasn't already been sent when the code is scanned (ONLY works in Send & Buffer and Send & Log modes).
3. *Delete Scanned Data from Memory* - Scanning this code will erase all data in the reader's non-volatile memory.

Auto Transfer Buffer Memory

By default, when reconnected, the CR2 will automatically transfer any data in memory once a connection to a host is established. If your application is not ready, the reader will send the data anyway and the data could be lost. If you do not wish for the reader to immediately send data upon connection, please scan the Disable Auto Transfer Buffer Memory code.

Send & Buffer Mode (Default)



M075_01

Transfer All Data in Memory



M077_02

Enable Auto Transfer Buffer Memory (Default)



M070_01

Log Only Mode



M072_01

Transfer Only Unsent Data in Memory



M078_02

Disable Auto Transfer Buffer Memory



M069_01

Send & Log Mode



M076_01

Delete Scanned Data from Memory



M071_01

RS-232 Considerations

In RS-232 Cabled-No Power mode, the CR2 will behave as if it is always connected even though the serial cable is disconnected or the power adapter is unplugged. Data scanned will be sent, regardless of connection status. Data scanned in Cabled-No Power mode will be lost if the CR2 is not connected to the serial cable - it will not buffer the data, unless Send & Log or Log Only mode has been enabled.

In RS-232 Batch-Cable Detect (Default) mode, the CR2 will detect if it is connected to a powered serial cable, if it is, it will then send the data. If a powered serial cable is not connected or if the power adapter is not connected to the serial cable, the CR2 will buffer the data. When the CR2 is then connected to a powered serial cable, the data will automatically upload.

RS-232 Batch-Cable Detect (Default)



M073_02

RS-232 Cabled-No Power



M074_02



Save Settings

M188_02

1.6 - Cabled Operation

1.6.1- Introduction

The CR2 is a Multi-Interface Unit (MIU) and is available with USB (6 ft. or 12 ft.), RS-232 (Serial) and PS/2 cables (Figure 1.9). All of the cables are connected to the CR2 with a 8-pin DIN connector.

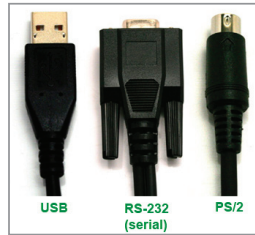


Figure 1.9

Hand Held CR2 - To install a cable directly to the CR2, correctly line up the 8-pin DIN connector into the back end of the reader. The arrows on the connector should be facing down (Figure 1.10). When the reader and the cable connector are lined up, firmly push the cable into the reader. The cable has a locking mechanism that will firmly hold the cable in place (Figure 1.11). To deattach the cable from the reader, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector.



Figure 1.10



Figure 1.11

CR2 with Cabled Handle - If a handle was purchased for use with the CR2, the 8-pin DIN connector is at the bottom of the handle (Figure 1.12). Insert the 8-pin connector and firmly push the cable into the handle. The cable has a locking mechanism that will firmly hold the cable in place. If using the H2 cabled handle, for additional stability, there is an optional cable attachment clip that can secure the cable to the handle with two threaded screws (Figure 1.13).



Figure 1.12



Figure 1.13



1.6.2 - CR2 as a USB Keyboard

To connect the CR2 to your host computer via USB interface:

1. Attach the USB cable to CR2 (Figure 1.14).
2. There is no need to power off the computer (Figure 1.15) Connect the USB cable to a USB port on the computer (Figure 1.16).
3. Once properly connected, the CR2 will power on and beep.
4. Scan the below code (M049_03) for USB Keyboard Mode:

USB Keyboard Factory Reset



M049_03

Save Settings



M188_02

5. Scan the Save Settings Code (M188_02)



Figure 1.14



Figure 1.15

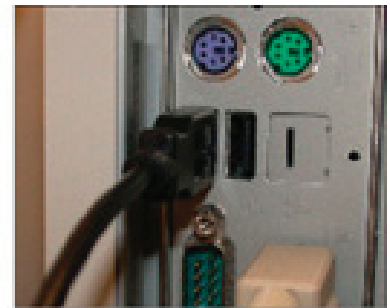


Figure 1.16



1.6.2.1 - Additional USB Communication Settings

USB Keyboard Mode - Data is sent from the Reader and interpreted by the host just as if a USB keyboard was being used to enter data.

USB Downloader - This mode is used when downloading firmware.

USB Native Two Way Mode - This mode is utilized when there is a need for error-corrected communication between the CR2 and an application through the USB port.

USB Virtual COM 1 Way Mode - This mode allows a USB-cabled CR2 to function as a virtual COM port. To use the CR2 in this mode, download the driver at www.codecorp.com/downloads.html.

USB HID POS (Terminal ID 131) - This mode allows a USB-cabled CR2 to communicate as a USB HID POS (Terminal ID 131) device.

Scan the following codes to set the appropriate USB communication setting:

USB Keyboard



M134_02

USB Downloader



M133_01

USB Native Two Way Mode



M135_04

USB Virtual COM 1 Way Mode



M668_01

USB HID POS (Terminal ID 131)



M736_01

1.6.2.2 - Keyboard Support

Scan the following codes to set appropriate keyboard mapping:

US English (Default)

**No Leading 0
for non-printable characters**



M172_01

**US English - Leading 0
for non-printable characters**



M602_01

**US English - ctrl + char
for non-printable characters**



M606_01

French



M603_01

German



M604_01

Japanese



M605_01

Universal Keyboard



M173_01

Custom Keyboard



M171_01

*Requests map to
be installed*

**Alternative OS
(Windows CE/MAC/Unix/Linux)
Enable**



M585_02

Alternative OS Disable



M584_02



M188_02

Save Settings

1.6.3 - PS/2 Cable Installation Guide

1. Power off the computer. If you disconnect the computer's keyboard while it is powered on, your computer will lock up.
2. Attach the the PS/2 cable to the CR2.
3. If you have a cabled keyboard, detach the keyboard cable from the computer and connect that same connector to the female connection on the CR2 PS/2 cable (Figure 1.17).
4. Now connect the male CR2 PS/2 connector into the keyboard port on the computer (Figure 1.18).
5. Power on the computer. The CR2 is powered by the PS/2 port and does not require a power supply.
6. Once properly connected, the CR2 will power on and beep.



Figure 1.17



Figure 1.18

PS/2 Factory Reset



M060_03

Save Settings



M188_02

Code does not guarantee compatibility
with all models of computers.



Save Settings

M188_02

1.6.4 - RS-232 (Serial) Cable Installation Guide

1. Attach the RS-232 (Serial) Cable to the CR2.
2. Connect the RS-232 (Serial) cable to a serial port on the computer (Figure 1.19). There is no need to power off the computer.
3. The RS-232 (Serial) interface has an optional 5V/1.5A power supply (Figure 1.20). If you have a power supply, plug the power supply adapter into the RS-232 (Serial) cable and then plug the power adapter into a wall socket (Figure 1.21).



Figure 1.19



Figure 1.20



Figure 1.21

4. Once properly connected, the CR2 will power on and beep.
5. For RS-232 (Serial) mode scan M418_02 (below). If the power supply is not connected scan M074_02 (below).
6. Scan the Save Settings Code (M188_02).

RS-232 (Serial) Factory Reset



M418_02

RS-232 (Serial) Mode No Power Supply



M074_02

Save Settings



M188_02

RS-232 Factory Default Settings

Mode: RS-232 One Way Mode

Baud Rate: 57600

Stop Bits: 2

Data Bits: 8

Parity: None

Warning: Code Corporation approved power adapter must be used. Reader failure due to use of incorrect power adapter will void warranties.



Save Settings

M188_02

1.6.4.1 - Additional RS-232 (Serial) Communication Data Bit Settings

Scan the following codes to set the appropriate data bit:

7 Data Bits



8 Data Bits (Default)



1.6.4.2 - Additional RS-232 (Serial) Communication Baud Rate Settings

Scan the following codes to set the appropriate baud rate:

1200



2400



4800



9600



19200



38400



57600 (Default)



115200



1.6.4.3 - Additional RS-232 (Serial) Communication Parity Settings

Scan the following codes to set parity:

Even



Odd



None (Default)



1.6.5 - Cabled Reader - Time Out Settings

Scan one of the codes below to set the amount of time a cabled CR2 will be enumerated before entering sleep mode in order to more quickly charge the battery:

Note: These settings will only work in versions 2098 and above.

Cabled Reader Time Out: 2 hours



Cabled Reader Time Out: Never (Default)



Save Settings

1.7 - Bluetooth Radio Operation

1.7.1 - Introduction

The CR2 features a Bluetooth® wireless radio. The radio allows for point-to-point wireless communication with other Bluetooth devices that support serial port protocol (SPP). If keyboard entry is necessary, Code XML Router will need to be installed. The following guide will give you general instructions on connecting your CR2 to a desktop or laptop computer with a Bluetooth radio.

Connecting With A QuickConnect Code

The easiest way to connect to a Bluetooth device is to visit the Code website and create a *QuickConnect Code* that is specific to your device (Figure 1.22). This code will link your CR2 directly to the desired Bluetooth device. To create a *QuickConnect Code*, you will need to know the Bluetooth address (often referred to as the BD_ADDR) of that device. You can usually find the 12-character Bluetooth address somewhere on the device near the device's serial number (see Figure 1.23).



Figure 1.22



Figure 1.23

If you purchased a CodeXML Bluetooth Modem or a Belkin® Bluetooth adapter from Code or from an authorized distributor, a QuickConnect Code was included. If you bought a Bluetooth adapter separately and wish to create a QuickConnect Code, please visit Code's web site at: <http://www.codecorp.com/bdaddr.php>.

Important Note: You will need to locate the Communications (COM) Port assigned to the Bluetooth serial port protocol. While installing the Bluetooth Configuration Manager Software that was included with your Bluetooth adapter, make sure to note the Communications (COM) Port number the software assigned for the adapter (e.g., COM 10). This is the COM Port through which the CR2 will connect.

To connect your reader, use the following steps:

1. Power on the CR2 reader by pressing one of the red buttons for one second to power on the reader.
2. Scan the Reset to RF Factory Defaults Code (M684_01).
3. Scan the Quick Connect Code you received or created from Code's website.
4. The CR2 will automatically connect to the computer. By default, the CR2 will beep once after it connects and beep four times in a row if it did not connect.
5. Scan the Save Settings Code (M188_02) if you want to save the wireless connection settings to the CR2 so that the CR2 will automatically try to connect wirelessly the next time it is powered on.

Reset to RF Factory Defaults



M684_01

Example: QuickConnect



0003C92DB48F

Save Settings



M188_02



Save Settings

M188_02

1.7 - Bluetooth Radio Operation (continued)

Radio Range and Transferring Data

The CR2 radio is a Class 1 device. If connected to another Class 1 device the reader has roughly a 100 meter (300 feet) line of sight operating range. If connecting to a Class 2 or Class 3 device, the operating range may drop to match the lower range. Once a reader is connected, a serial application must be opened (HyperTerminal) unless Code XML Router is installed.

When the CR2 detects the radio is out of range, the CR2 will store data on the reader's non-volatile memory. The reader will continue to try and send data until radio is back in range. Once the data is sent the data will be erased from the reader's memory. The reader will continue to try and connect until it has reached the programmable radio time out setting.

The CR2 Bluetooth protocol allows for two (2) forms of communication:

1. **Standard Bluetooth Reliability Mode** (previously One Way Mode) - Communication between the reader and host, that does not require host acknowledgement. This mode is only recommended when connecting to a device well within its specified range or if connecting to a simple device (e.g., printer). There are two settings in this mode:
 - Max Range (Default) - Greater range but data reliability is lower
 - Max Reliability - Limits range but reliability is improved

RF Standard Bluetooth Reliability Mode (Max Range)



M127_01

RF Standard Bluetooth Reliability Mode (Max Reliability)



M128_01

Note: One Way Mode doesn't guarantee data integrity, and you may have data loss when operating in the fringes of radio range or in the presence of radio interference.

2. **Additional Bluetooth Reliability Mode** (previously Two Way Mode) - This mode requires the implementation of software at the application level.* The reader receives confirmation via packet protocol verification and is 100% reliable. Data will be automatically retransmitted if necessary.

RF Additional Bluetooth Reliability Mode



M129_02

* **Note:** You will need either Code XML Router Software or a Code XML Bluetooth Modem on the PC side to use the Additional Bluetooth Reliability Mode.

If you are using the CodeXML Bluetooth Modem, you must use RF Additional Bluetooth Reliability Mode.



Save Settings

M188_02

1.7 - Bluetooth Radio Operation (continued)

Permanently Establishing a Connection

Scan the Save Settings Code at the bottom of the page to make the RF settings (including which device to connect to) permanent on the reader:

Disconnecting from the Device

You may force disconnection by reading the disconnect code below (The CR2 may not appear disconnected in the slave Bluetooth connection manager for 10 – 15 seconds after the command is issued). The CR2 will also disconnect after 90 seconds of inactivity (**Note:** You may change the radio sleep time out setting; however, it may reduce battery life).

Bluetooth Disconnect



M114_02

Reconnecting to the Device

If the device is saved in RF mode and has a save connection (save was performed while connected) it will automatically reconnect when:

1. CR2 is powered up
2. CR2 wakes from sleep mode
3. CR2 reads another code

1.7.2 - Bluetooth Radio Auto Connect

Auto Connect: After coming out of sleep mode or after powering up the CR2 tries to auto connect with the last Bluetooth radio with which it was connected if the steps (previous) were followed (see Section 1.7.1 - Connecting with a Quick Connect Code). You may also re-connect by scanning a QuickConnect code.

Scan the following codes to enable or disable Auto Connect feature for the Bluetooth radio:

Bluetooth Radio Auto Connect: On (Default)



M068_01

Bluetooth Radio Auto Connect: Off



M067_01

Note: Auto Connect should always be set to “On” if Auto Disconnect is set to “On”. Otherwise the QuickConnect code would need to be re-scanned after every disconnect.

1.7.3 - Bluetooth Radio Auto Disconnect

Auto Disconnect: This feature is used when multiple CR2 readers are connecting to the same Bluetooth Radio. By enabling Auto Disconnect the CR2 radio disconnects after each data transmission, allowing other radios to connect.

Scan the following codes to enable or disable Auto Disconnect feature for the Bluetooth radio:

Bluetooth Radio Auto Disconnect: On



M066_01

Bluetooth Radio Auto Disconnect: Off (Default)



M065_01



Save Settings

M188_02

1.7.4 - Bluetooth Radio Time Out Settings

Scan the following codes to set the period of time before the Bluetooth Radio will go into sleep mode due to inactivity:

Note: Increasing the time before the reader will time out will decrease battery life.

90 Seconds (Default)



M125_01

5 Minutes



M121_01

10 Minutes



M122_01

15 Minutes



M123_01

30 Minutes



M124_01

1 Hour



M119_01

2 Hours



M120_01

1.7.5 - Bluetooth Radio Out of Range Notification Settings

Scan the following codes to enable a beep or vibrate notification when the radio goes out of range:

Bluetooth - Out of Range

Beep: On



M583_01

Bluetooth - Out of Range

Notify with Vibrate: On



M582_01

Bluetooth - Out of Range

Vibrate & Beep: On



M587_01

Bluetooth - Out of Range

Vibrate and/or Beep: Off (Default)



M581_01

Note: This feature may also be utilized to remind users they are carrying a reader and help prevent users from walking away with a reader Bluetooth radio.

1.7.6 - Auto Save Last Bluetooth Address

If the reader is saved in the proper RF communication mode, enabling this setting will allow the reader to automatically save the last device to which it was connected, removing the need to scan the save setting after scanning the QuickConnect code.

Enable Auto Save



M746_01

Disable Auto Save (Default)



M747_01



Save Settings

M188_02

1.7.7 - Configuration for Belkin Bluetooth Manager Software (Version 1.4.2.10)

In this version of the Belkin Bluetooth Manager software, you must disable the authentication feature to connect a CR2. Follow the steps below:

1. Double click on the Bluetooth icon in the system tray. In the My Bluetooth Places Screen, select Advanced Configuration.



figure 1

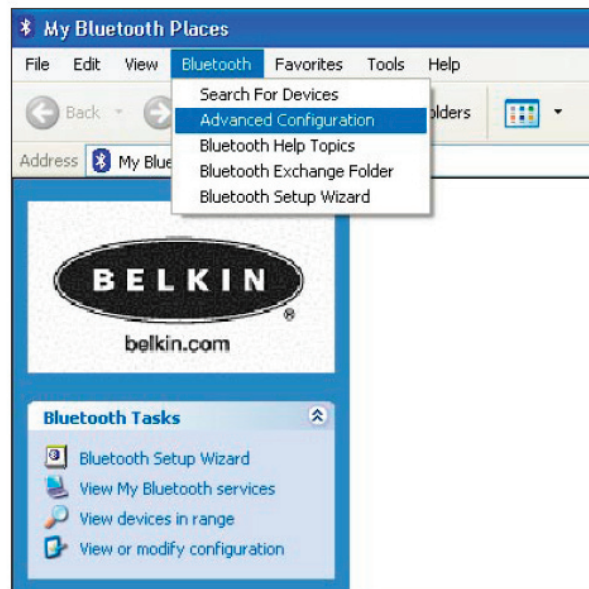


figure 2

2. Select the Local Services tab and double click on the Bluetooth Serial Port. Under the General tab unselect the Secure Connection box. This disables the encryption feature and allows the CR2 to connect to the Bluetooth adapter. Click Apply.

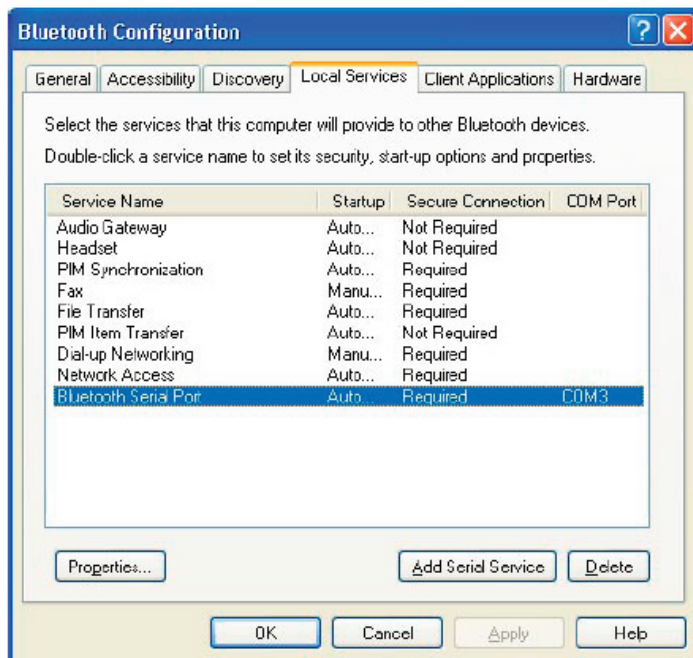


figure 3

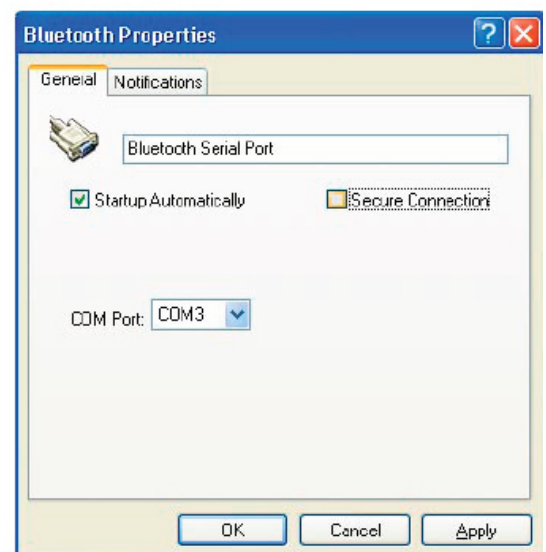


figure 4



1.7.7 - Configuration for Belkin Bluetooth Manager Software (Continued)

3. Your local service Bluetooth Serial Port profile should now read “Not Required”

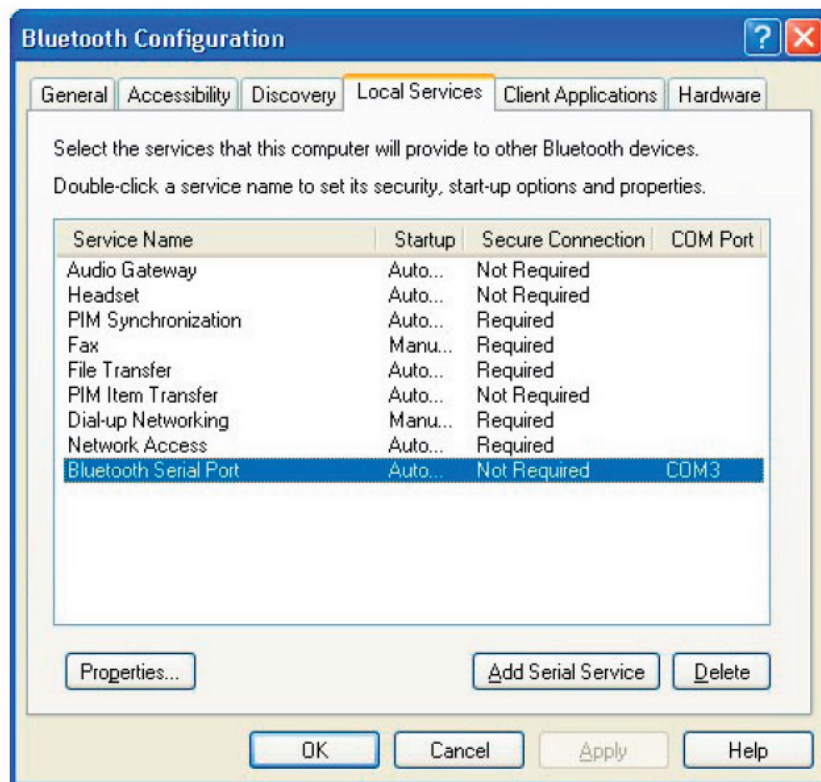


figure 5

4. Open the “Accessibility” Tab and verify that “All Devices” are allowed to connect (this is the default setting). You should now be able to connect your CR2.

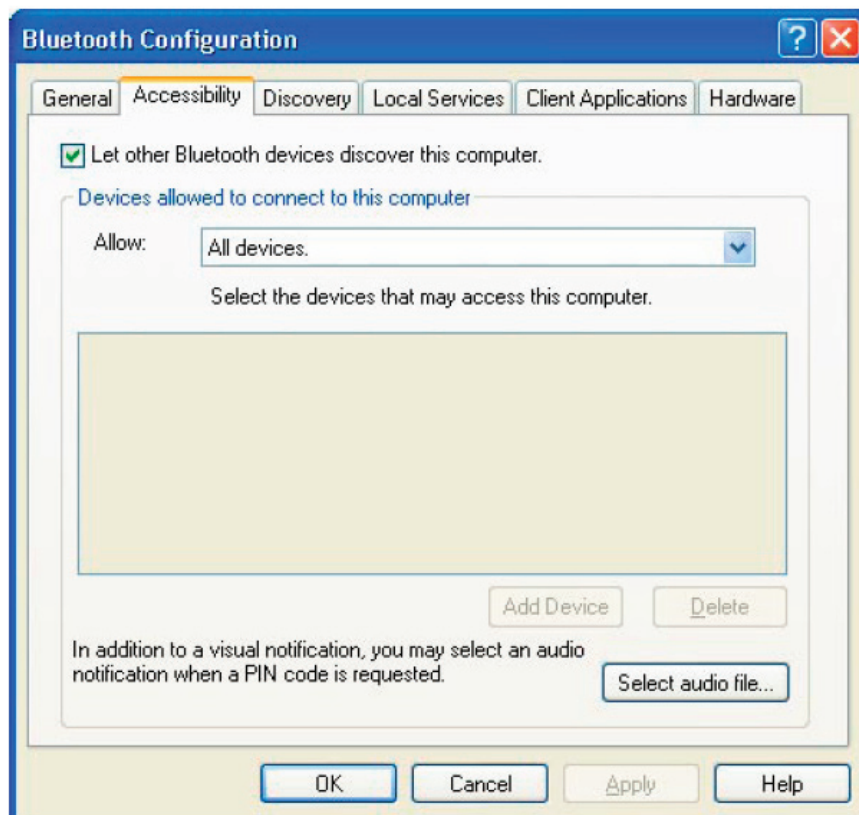
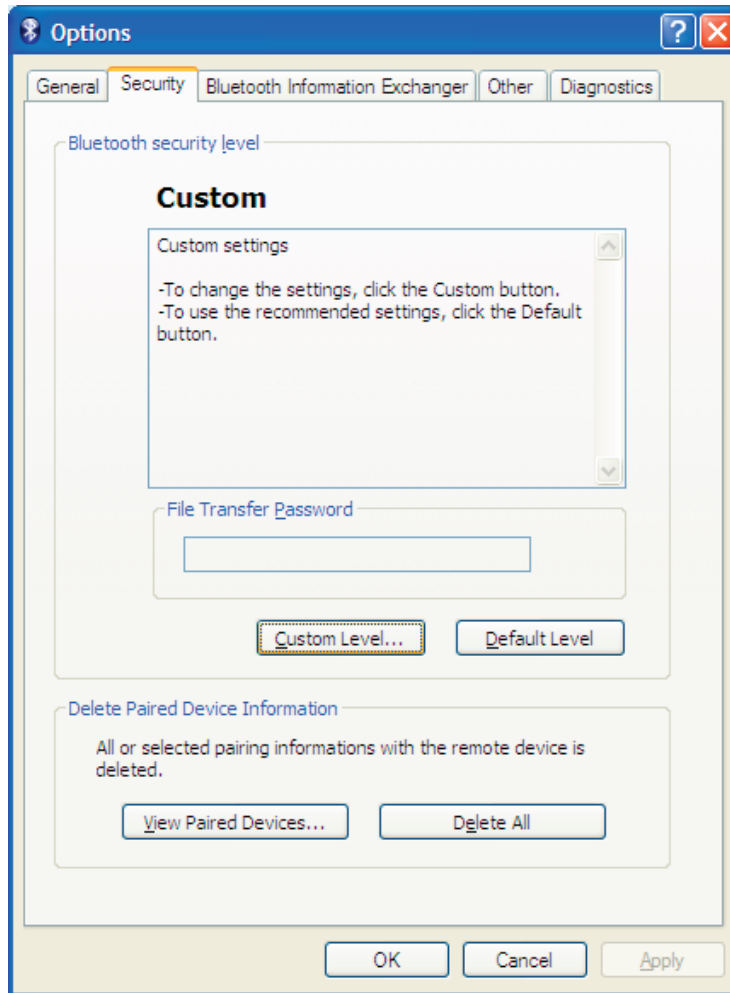


figure 6



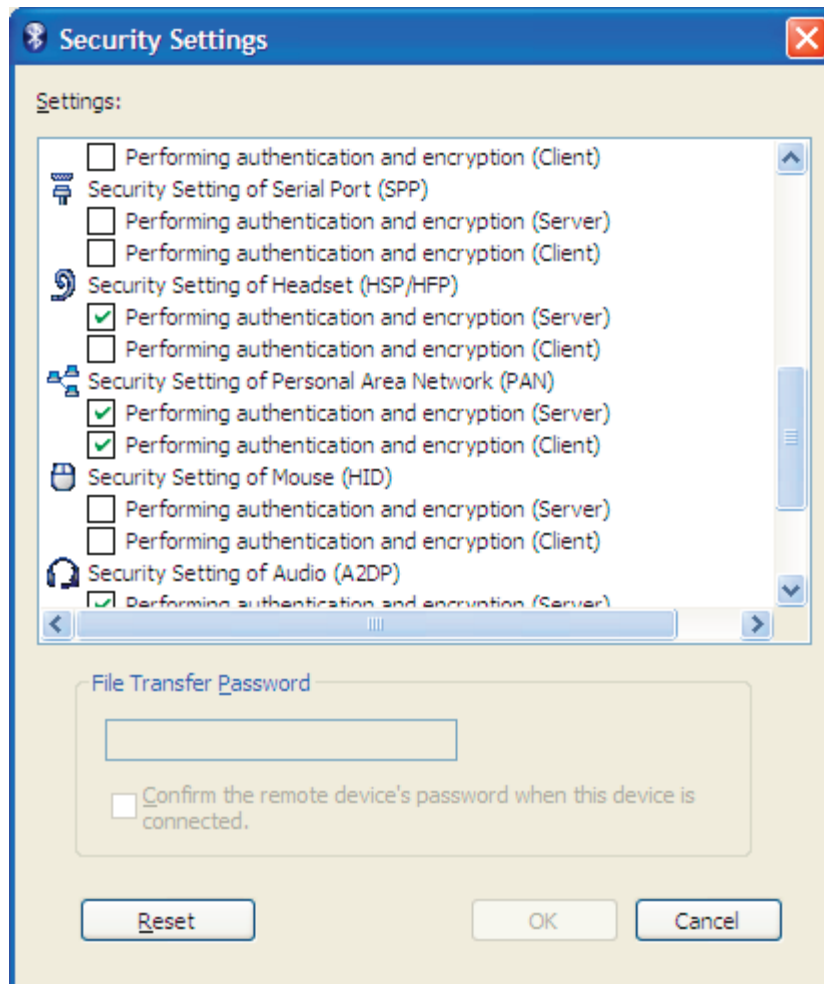
1.7.8 - Configuration for Toshiba Bluetooth Stack Instructions (continued)

- 3a. Go to <http://www.codecorp.com/bdaddr.php> and create a QuickConnect code using the address from step 3. Use the CodeXML Router/ 2-way applications section if CodeXML Router will be installed. Else create a QuickConnect Code using the section for Serial Applications.
4. Optional – To remove the Passkey dialogue when connecting, Select the Security TAB and Select Custom Level.



1.7.8 - Configuration for Toshiba Bluetooth Stack Instructions (continued)

- 4a. Uncheck the settings under the Security Setting of Serial Port (SPP).

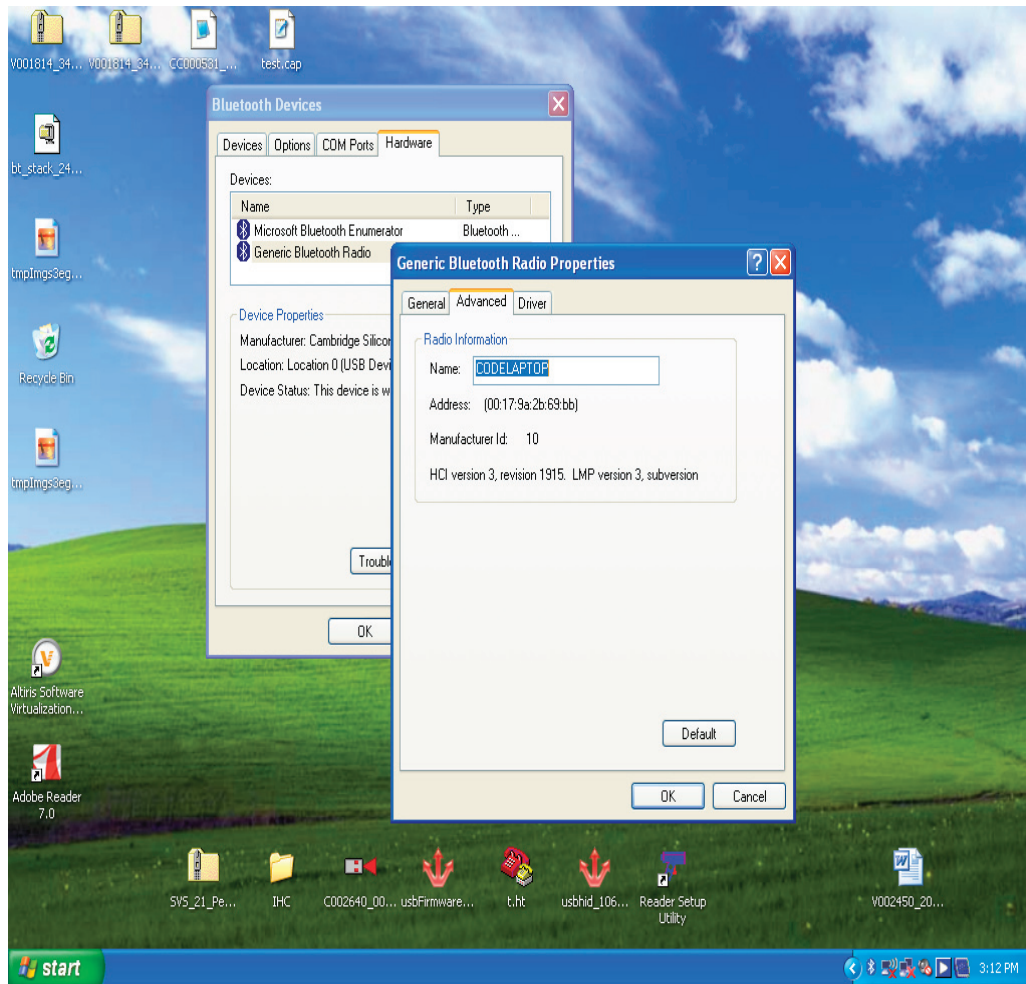


5. Install the Code XML Router Software to the Device on the Appropriate COM Port. Reboot the PC and then scan your QuickConnect code to connect. Please note that the Toshiba Stack does not allow a device to connect until the Com Port is opened. CodeXML Router must be installed or the serial application must be started before the QuickConnect Code is read.
6. Scan the QuickConnect Code generated in step 3. If step 4 was not done, Windows will prompt for a Passkey. The default Passkey is "12345678".



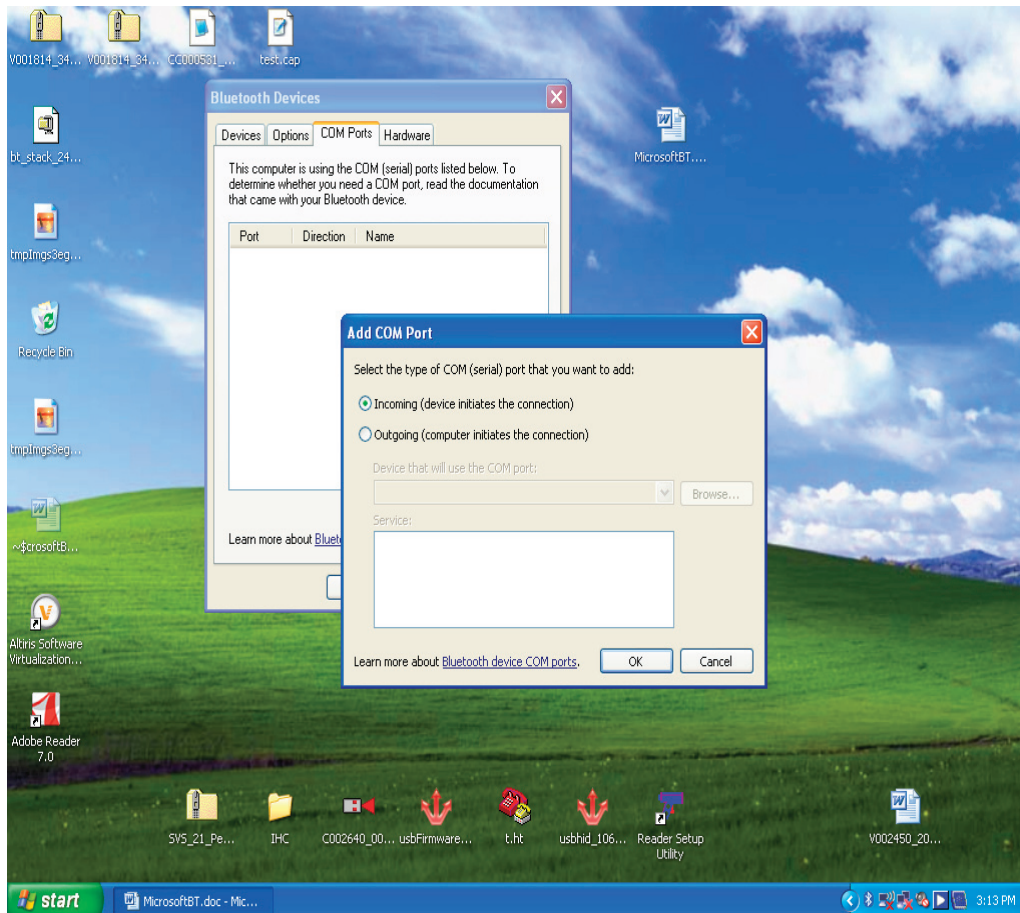
1.7.9 - Configuration for Microsoft Bluetooth Stack Instructions

1. Right click on the Microsoft Bluetooth Stack system tray icon, select “Open Bluetooth Settings”.
2. Go to the “Hardware” tab and select the “Generic Bluetooth Radio” and then click “Properties”. Next select the “Advanced” tab. Note the Address. For the example show below it is 00:17:9a:2b:69:bb.



1.7.9 - Configuration for Microsoft Bluetooth Stack Instructions (continued)

- 2a. Go to <http://www.codecorp.com/bdaddr.php> and create a QuickConnect code using the address from step 2. Use the CodeXML Router/ 2-way applications section if CodeXML Router will be installed, otherwise create a QuickConnect Code using the section for Serial Applications.
3. Under “COM Ports” tab, select “Add”. In Add COM Port dialog box, select Incoming, click OK. Windows installs driver and create a Bluetooth COM Port. Note the COM port number.

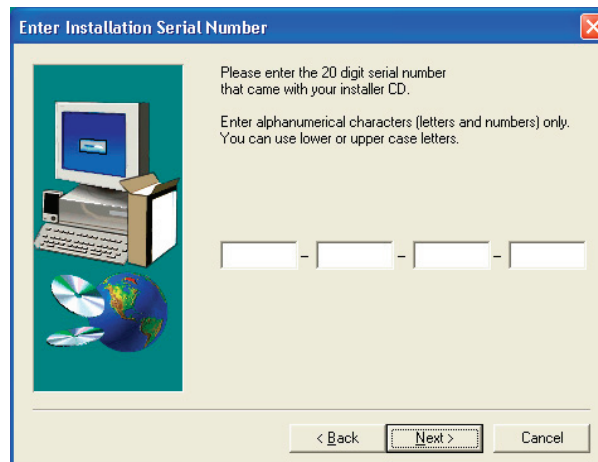


4. Install the Code XML Router Software to the Device on the Appropriate COM Port. Reboot the PC and then scan your QuickConnect code to connect. Please note that the Window Stack does not allow a device to connect until the Com Port is opened. CodeXML Router must be installed or the serial application must be started before the QuickConnect Code is read.
5. Scan the QuickConnect Code generated in step 3. Windows will prompt for a Passkey. The default Passkey is “12345678”.

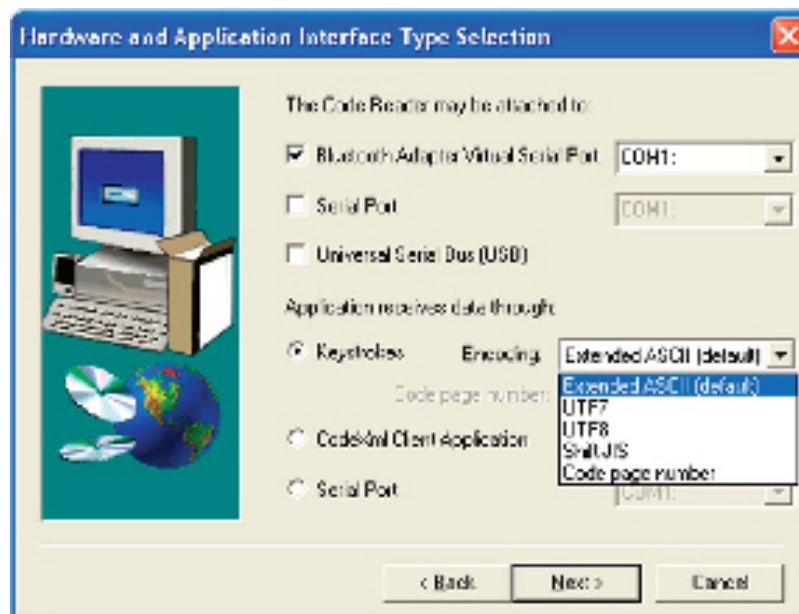


1.7.10 - Installing CodeXML Router Bluetooth Edition for Windows

1. Insert the Code Router Bluetooth Edition for Windows CD into your PC's CD drive. The CD will automatically begin the installation process. When you get to the screen pictured below, please enter the CD Serial # Key found on the card included in the CD case.



2. When you get to the screen pictured below, please choose from the appropriate settings. For a description of each setting, please see Chapter 3. **If connecting via Bluetooth radio, you will need to know the Virtual COM port number your Bluetooth software has assigned (see Frequently Asked Questions).** If you wish to enable the AutoDownload feature please check the appropriate box in the next screen. Finish the installation process and restart your computer.



3. After restarting your computer, you will see a blue "arrows" icon in the system tray of your computer. CodeXML Router was successfully installed.



1.8 - CR2 Feedback Guide

The CR2 features two (2) LED's on the front of the unit. These LED's give feedback based on various functions of the CR2 unit. Each LED has a small icon just underneath it that represents the following:



Memory / Connection Icon



Battery or Power Icon

The CR2 unit will automatically flash battery or power status every 15 seconds. Each LED can show three (3) colors; Green, Amber, or Red. The colors will vary depending on the message the unit is sending.

- **Green** = 50% - 100% capacity of battery
- **Amber** = 20% - 50% capacity of battery or 10% - 99% of memory available
- **Red** = 0% - 20% capacity of battery or no memory available

The CR2 also emits beeps or vibrates for user feedback. Please follow the table below to better understand your unit's feedback.

Normal Operation Feedback

	 Memory/Connection LED	 Battery LED	Sound
CR2 Successfully Powers Up	Flash Green	Flash Green	1 Beep
CR2 Successfully Enumerates with Host via USB Cable	None	Solid Green	1 Beep
Attempting to Decode	None	Battery Status	None



Normal Operation Feedback (con't)

	 Memory/Connection LED	 Battery LED	Sound
Successful Decode and Data Transfer via cable	None	Solid Green	1 Beep
Successful Decode and Data Store	Memory Status	None	1 Beep
Batch Mode memory full	Solid Red	None	3 Beeps
Configuration Code Successfully Decoded and Processed	None	None	1 Beep slight pause then 1 Beep
Configuration Code Successfully Decoded But Was Not Successfully Processed	None	None	6 Beeps

Bluetooth Radio Feedback

	 Memory/Connection LED	 Battery LED	Sound
Attempting to Connect	Flashes Blue	Solid Green	None
Failed to Connect	None	None	4 Beeps
Connected	Flashes Blue Every 15 seconds	Flash Battery Status Every 15 seconds	None
Sending Data	Flashes Memory Status	None	None



1.9 - Targeting and Reading Techniques

The CR2 utilizes digital camera technology to take a picture of a symbol. Once an image is captured, the CR2 utilizes advanced decoding algorithms to extract data from the captured image.

The CR2 is available as a palm-held unit or users may purchase a handle (available in various types).

The palm held unit features left and right triggers. These triggers may be programmed to perform various features. The reader is shipped with the left trigger and right trigger functioning as a decode symbol command.

Each handle has a trigger on the grip. The two triggers on the top of the unit also work when the handle is attached.



To read a symbol with the CR2:

1. The CR2 features omnidirectional decoding. Center the symbol in any orientation within the laser dot aiming pattern (Figure 1.24).



Figure 1.24

Note: The CR2 can read a symbol that is not centered; however the CR2 performs best when a code is centered. If two (2) bar codes are within the imager's decode zone, the CR2 will decode the symbol closest to the center of the aiming dot.

2. The CR2 was developed to decode both very small 2-dimensional symbols and larger 1-dimensional symbols. The unit has an innovative dual field decode zone. The CR2 **DECODES BOTH ZONES SIMULTANEOUSLY**. The unit has a lens focused on a near-field for smaller codes (optimal focal point is 4 inches) and one lens focused on a far-field for larger codes (optimal focal point 9 inches). To read smaller symbols move the CR2 closer to the symbol. To read larger symbols move the unit farther away from the symbol. The entire CR2 decode zone varies between two (2") and twenty (20+" or more inches.
3. Hold the CR2 still - **DO NOT SWIPE OR MOVE THE READER**. Press the trigger until the CR2 beeps, indicating the code has been successfully decoded.
4. The reader may be optimized to your specific environment by scanning codes in Chapter 2.

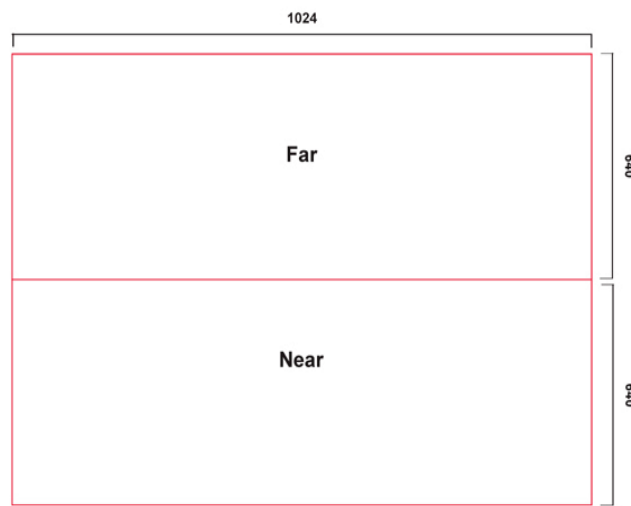


1.10 - Imager Field of View and Resolution

The CR2's dual field optical system may be modified based on your scanning environment. The CR2's megapixel imager may be set to the following three modes:

The 1.3 Million Pixel imager is divided into near field and far field decode zones. In each zone the resolution is 1024 x 640 pixels (see Figure 1.25). In this mode of operation the reader utilizes the highest resolution creating the widest working range on bar code and 2-dimensional symbols of all densities. The trade-off is the amount of time the reader spends processing the image. This time can be reduced by optimization functions:

If only the near field is used (small symbols), the far field image can be ignored. If only the far field is used (large symbols), the near field can be ignored. Further optimization may be obtained by "windowing" the field to a smaller area. Each focal area may be narrowed by enabling the windowing feature found in section 5.2.



SXGA Imaging Area

Figure 1.25



1.11 - Decode Zone

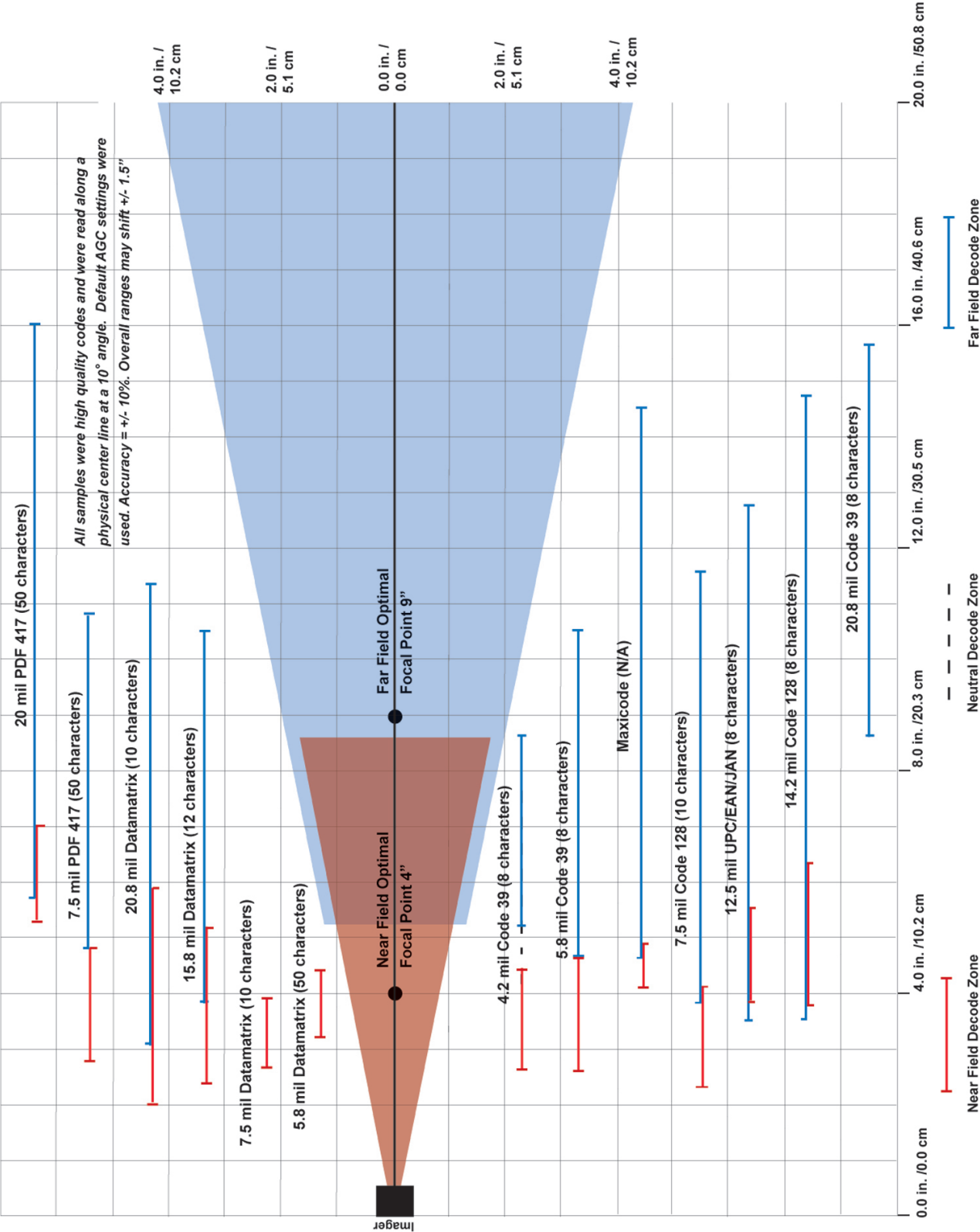


Figure 1.26



Save Settings

Chapter 2 - Optimization and Trigger Programming



2.1 - Introduction

From the moment you turn on your CR2, you are taking full advantage of the dual path 1.3 megapixel imager, the 400 MHz processor. CR2 readers are able to read a wide range of symbology types and sizes, as well as a variety of printed media, within a wide range of environmental factors including light (natural or ambient lighting).

By defining if you are scanning large, small, high density or low density types of symbology(s), the CR2 has options that will maximize decoding speed.

The chart below shows options that will improve performance based on parameters listed in each box.

SXGA	
Both Fields	SB High Density Codes Standard Density Codes Small to Large Codes
Near Field	SN High Density Codes Small Size 2D
Far Field	SF Standard Density Codes Medium to Large Codes

The CR2 is easily customizable; each trigger can be independently programmed for different behavior.

Near Field (NF): The closest optimal focal point of the CR2’s two image fields. The Near Field can decode the highest density barcode. It has an optimal focal point of 4” (101.6 mm) away from the lens of the reader. See Figure 1.26 for optimal read distances.

Far Field (FF): The farthest field of the CR2’s two image fields. It has an optimal focal point of 9” (228.6 mm) away from the lens of the reader with a 4” wide field of view at this point.

The following tables provide readable codes to program all or individual triggers to perform within different parameters. See Figure 1.26 for optimal read distances.



2.2 - Global Trigger Optimization Matrix

	SXGA
Both Fields	 M613_03
Near Field	 M614_03
Far Field	 M615_03

2.3 - Left Trigger Optimization Matrix

	SXGA
Both Fields	 M631_02
Near Field	 M632_02
Far Field	 M633_02

2.4 - Left Trigger Programming

Left Trigger Take Picture



Note: If you program a trigger to another function, you will need to reset any performance code settings.

2.5 - Right Trigger Optimization Matrix

	SXGA
Both Fields	 M640_02
Near Field	 M641_02
Far Field	 M642_02

2.6 - Right Trigger Programming

Right Trigger Take Picture



Note: If you program a trigger to another function, you will need to reset any performance code settings.



2.7 - Handle Optimization Matrix

	SXGA
Both Fields	 M622_03
Near Field	 M623_03
Far Field	 M624_03

2.8 - Handle Trigger Programming

Handle Trigger Take Picture



Note: If you program a trigger to another function, you will need to reset any performance code settings.



2.9 - Continuous Trigger Optimization Matrix

Scanning codes in the matrix puts the reader into Continuous scan.

SXGA	
Both Fields	 M649_02
Near Field	 M650_02
Far Field	 M651_02

2.10 - Continuous Scan

Off (Default)



On



Note: This function is only recommended for cabled or short term use if battery is the only power supply. See section 2.11.1 for Sleep Time Out Settings.



Save Settings

2.11 - Continuous Scan Settings

2.11.1 - Continuous Scan - Sleep Time Out

Scan one of the codes below to set the amount of time a cabled CR2 will operate in continuous scan mode, without a decode, before entering sleep mode:

Cabled - 2 hours (Default)



Cabled - Always



Scan one of the codes below to set the amount of time an uncabled CR2 will operate in continuous scan mode before entering sleep mode:

Uncabled - 5 minutes (Default)



Uncabled - 15 Minutes



Uncabled - 30 Minutes



Note: This function is only recommended for short term use because of battery consumption.

2.11.2 - Continuous Scan - Trigger Delays

Scan the following codes to set delay time between scans:

0 Seconds (Default)



1 Second



3 Seconds



2.11.3 - Continuous Scan - Duplicate Scan Delay

Scan the following codes to set the delay time for reading duplicate codes:

0 Seconds (Default)



1 Second



3 Seconds



2.12 - Motion Detection Scan Settings

Scan the following codes to set the reader to read when it detects motion in its scanning zone.

On



Off (Default)



Save Settings

Chapter 3 - CR2 Programming: Symbology Settings

3.1 - Aztec Symbology

Scan the following codes to enable/disable Aztec symbology settings:

Aztec On



M273_01

Aztec Off (Default)



M272_01

Sample Aztec Code



3.2 - Codabar Symbology

Scan the following codes to enable/disable Codabar symbology settings:

Codabar On (Default)



M275_01

Codabar Off



M274_01

Sample Codabar



A123456789A

3.3 - Codablock F Symbology

Scan the following codes to enable/disable Codablock F symbology settings:

Codablock F On



M277_01

Codablock F Off (Default)



M276_01

Sample Codablock F Code



Note: When Codablock F and Code 128 decoding are enabled, there is some danger of mistakenly decoding a damaged Codablock F symbol as a Code 128 symbol. Therefore, Code 128 decoding should be disabled when Codablock F decoding is enabled.

3.4 - Code 11 Symbology

Scan the following codes to enable/disable Code 11 symbology settings:

Code 11 On (Default)



M394_01

Code 11 Off



M393_01

Code 11 Checksum 1 digit



M395_01

**Code 11 Checksum 2 Digit
& Stripped from Result**



M396_01

**Code 11 Checksum 1 Digit
& Stripped from Result**



M397_01

Code 11 Sample



Save Settings

M188_02

3.5 - Code 39 Symbology

Scan the following codes to enable/disable Code 39 symbology settings:

Code 39 On (Default)



M235_01

Code 39 Off



M234_01

Enable Checksum



M237_01

Disable Checksum (Default)



M236_01

Enable Checksum and Strip From Result



M238_01

Code 39 Extended Full ASCII On



M233_01

Code 39 Extended Full ASCII Off (Default)



M232_01

Code 39 Short Margin On



M390_01

Code 39 Short Margin Off (Default)



M389_01

Code 39 Trioptic On



M671_01

Code 39 Trioptic Off



M670_01

Sample Code 39 Code



12345678

Sample Trioptic Code 39



123456

3.6 - Code 93 Symbology

Scan the following codes to enable/disable Code 93 symbology settings:

Code 93 On (Default)



M281_02

Code 93 Off



M280_01

Sample Code 93 Code



123456789



Save Settings

M188_02

3.7 - Code 128 Symbology

Scan the following codes to enable/disable Code 128 symbology settings:

Code 128 On (Default)



Code 128 Off



Code 128 Short Margin On



Code 128 Short Margin Off (Default)



Sample Code 128 Code



Note: When Codablock F and Code 128 decoding are enabled, there is some danger of mistakenly decoding a damaged Codablock F symbol as a Code 128 symbol. Therefore, Code 128 decoding should be disabled when Codablock F decoding is enabled.

3.8 - Composite Symbologies

Scan the following codes to enable/disable Composite symbology settings:

Composite On



Composite Off (Default)



3.9 - Data Matrix Symbology

Scan the following codes to enable/disable Data Matrix symbology settings:

Rectangular Data Matrix On



Rectangular Data Matrix Off (Default)



Data Matrix Inverse On



Data Matrix Inverse Off (Default)



Enable improved reading capability for hard to decode datamatrix symbols.



Disable improved reading capability for hard to decode datamatrix symbols. (Default)



Sample Data Matrix Code



Sample Rectangular Data Matrix Code



Save Settings

3.10 - GoCode Symbology

GoCode is a miniature, two-dimensional (2-D) symbol. Developed to fit within a line of text, GoCode features a multi-dimensional, adaptable matrix pattern that may be reproduced on virtually any surface. GoCode is a private symbology and may be utilized by purchasing a runtime license through Code. GoCode has many significant advantages over all common linear barcodes and 2-D symbols. Please contact Code for more information on the benefits of utilizing a private symbology.

Sample GoCode



3.11 - Interleaved 2 of 5 Symbology

Scan the following codes to enable/disable Interleaved 2 of 5 symbology settings:

Int 2 of 5 On (Default)



M244_01

Int 2 of 5 Off



M243_01

Int 2 of 5 Two Digits On



M246_01

Int 2 of 5 Two Digits Off



M245_02

Int 2 of 5 Four Digits On



M248_01

Int 2 of 5 Four Digits Off



M247_01

Sample Int 2 of 5 Code



123456789

3.12 - Maxicode Symbology

Scan the following codes to enable/disable Maxicode symbology settings:

Maxicode On



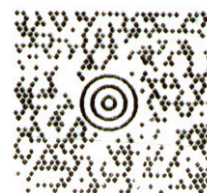
M289_04

Maxicode Off (Default)



M288_01

Sample Maxicode



Save Settings

M188_02

3.13 - Matrix 2 of 5 Symbology

Scan the following codes to enable/disable Matrix 2 of 5 symbology settings:

Matrix 2 of 5 On (Default)



Matrix 2 of 5 Off



Matrix 2 of 5 Sample



3.14 - Micro PDF417 Symbology

Scan the following codes to enable/disable micro PDF 417 symbology settings:

MicroPDF417 On



MicroPDF417 Off (Default)



Sample MicroPDF417



3.15 - MSI Plessey Symbology

Scan the following codes to enable/disable MSI Plessey symbology settings:

MSI Plessey On



MSI Plessey Off (Default)



Sample MSI Plessey



3.16 - NEC 2 of 5 Symbology

Scan the following codes to enable/disable NEC 2 of 5 symbology settings:

NEC 2 of 5 On



NEC 2 of 5 Off (Default)



3.17 - Optical Character Recognition (OCR)

The Code Reader can read Optical Character Recognition (OCR) texts. The following codes can be used to enable/disable this feature. Fonts supported include Passport, ISBN, Price, MICR13, and a user defined template:

Disable OCR (Default)



Enable OCR



Purchase of OCR license required.



Save Settings

3.18 - PDF 417 Symbology

Scan the following codes to enable/disable PDF 417 symbology settings:

PDF 417 On (Default)



M293_01

PDF417 Off



M292_01

Macro PDF 417 On



M287_01

Macro PDF 417 Off (Default)



M286_01

Sample PDF 417 Code



3.19 - Pharmacode

For an explanation of Pharmacode settings and all programming codes please refer to Appendix G of the CR2 User Manual. You may download the Appendix G at:

<http://www.codecorp.com/manuals.html>

3.20 - Postal Symbologies

All postal code default settings are OFF. Scan the following codes to enable the appropriate Postal symbology:

Note: If you wish to change which Postal code is activated, you MUST first scan the disable all postal codes symbol and then scan your desired symbology.

Australian Post On



M252_01

Japan Post On



M253_01

KIX



M254_01

Planet On



M256_01

Postnet On



M257_01

Postnet and Planet On



M255_01

Royal Mail On



M258_01

**Disable All
Postal Codes (Default)**



M259_01

Sample Postnet Code



4-State CB On (Intelligent Mail)



M748_01



Save Settings

M188_02

3.21 - QR Code Symbology

Scan the following codes to enable/disable QR Code symbology settings:

QR Code On



QR Code Off (Default)



Enable Checksum



Disable Checksum (Default)



QR Code Inverse On



Both Inverse and Standard On



All QR On (includes Micro QR)



Inverse QR and Micro QR On



Sample QR Code



Sample Micro QR



3.22 - GS1 data bar (formerly RSS) Symbology

Scan the following codes to enable/disable GS1 data bar (formerly RSS) symbology settings:

GS1 data bar Limited On



Truncated On



GS1 data bar 14 Stacked On



GS1 data bar Expanded On (Default)



All GS1 data bar On



All GS1 data bar Off



Sample GS1 data bar Limited Code



Sample GS1 data bar 14 Code



Sample GS1 data bar 14 Truncated Code



Sample GS1 data bar 14 Stacked Code



Save Settings

3.23 - Telepen Symbolology

Scan the following codes to enable/disable Telepen symbology settings:

Telepen On - Default



M677_01

Telepen Off



M676_01

Sample Telepen



23456781

3.24 - UPC/EAN/JAN

Scan the following codes to enable/disable UPC/EAN/JAN symbology settings:

UPC On (Default)



M295_01

UPC Off



M294_01

UPC Short Margin Enabled



M299_01

UPC Short Margin Disabled (Default)



M298_01

UPC Extension On



M297_01

UPC Extension Off



M296_01

Sample UPC A Code



1 23456 78912 8



Save Settings

M188_02

Chapter 4 - Reader Feedback and Special Settings

4.1 - Volume and Vibration Settings

Scan the following codes to set vibration mode:

Vibrate On / Beep On



Vibrate On / Beep Off



Vibrate Off / Beep On (Default)



Scan the following codes to set your reader's volume:

Beep Off



Beep Low



Beep High (Default)



4.2 - Code Readability Index

The Readability Index provides a measurement of a specific symbol's ease or difficulty to be decoded by the CR2. The Readability Index is specific to the CR2, and should not be confused with a verification quality measurement.

The Readability Index is a blend of information obtained from the internal operations of the decoding algorithm pertaining to contrast, symbology construct, error detection, forward error correction (if applicable), and other symbology-specific characteristics.

The Readability Index is a score on a scale of 01 (very poor) to 100 (very readable). Due to differences based on motion, skew, reflection, focus, and ambient lighting, the Readability Index on the same symbol may vary somewhat from read to read. However, a poor contrast or damaged symbol will score lower than a high contrast undamaged symbol. The Readability Index can be used as a quick check on the reliability of label generation or marking systems. When used in conjunction with the CR2 stand (or fixed mount positioning) which fixes the distance from the reader to the symbol, and constant ambient light, the Readability Index provides a symbol quality assurance tool and check point for feedback to an overall label or marking quality control system.

The Readability Index is enabled by first reading a CodeXML rule into the permanent CR2 Memory:

Code Readability Index Rule:



Readability Index Output Enable:



Readability Index Output Disable:



Each time a data symbol is read, the index will be output, followed by a comma, (,) followed by the decoded data. The reader will store the rule and reset, but will not output the Readability Index until the Readability Index Output Enable code is read. The Reader will continue to output the Readability Index upon every read until disabled, either by reset or by reading the Readability Index Output Disable code.



Save Settings

4.3 - Laser Settings

Scan the following codes to turn laser targeting on/off:

On (Default)



M055_01

Off



M054_01

Scan one of the following codes to set the brightness of the CR2 laser.

High (Default)



M058_01

Medium



M057_01

Low



M056_01

4.4 - Reader Power Off Settings

Scan the following codes to set the amount of time before a reader powers off:

1 Hour



M691_02

2 Hours - Default



M688_02

4 Hours



M689_02



Save Settings

M188_02

4.5 - Reader ID and Firmware Version

To find out the Reader ID and firmware version, open a text editor program (i.e., Notepad, Microsoft Word, etc.) and read the following code:

Reader ID and Firmware



M153_01

You will see a text string indicating your firmware version and CR2 ID number (see below):

Xap/iVVVWWWXXXXSSSSSSSSSSPXX-XX+XXX

Xap/i - Code Internal ID (not applicable)

VVV is the application firmware version number

WWW is the bootloader firmware version number

XXXX is the radio firmware version number

SSSSSSSSSS Reader's serial number (ten digits)

P is "A" if running firmware is the application, "B" if BootLoader

XX-XX+XX - Internal ID (not applicable)

Example: Xap/i3000300006040010002363A06D-SD+SQ

Note: Code will periodically release new firmware for CR2 readers. For information on latest firmware versions, call Code at (801) 495-2200. To upgrade firmware, please visit our website at <http://www.codecorp.com/codesupport/html> and follow instructions provided.

4.6 - Reader Settings Lock

To lock or unlock the current settings on your reader please scan the codes below:

Reader Settings Locked



M429_01

Reader Settings Unlocked



M428_01

NOTE: Prefix and Suffix programming codes, memory transfer and delete commands, "Clear All CodeXML Rules" and "Suffix -Erase/None" commands are not locked by this feature.



Save Settings

M188_02

4.7 - Lock-out Link Mode

This mode can be used to establish a permanent connection between the reader and a CodeXML modem,

Prepare the reader to communicate in 'RF Comm Mode' by scanning the QuickConnect code on the paired modem to which you wish to establish a permanent link. Listen for the single beep to verify the connection acknowledgement. Scan the Lockout Link Mode code (see below). Set appropriate timeout settings, if applicable (see Section 1.6.5).

To reassign a permanent connection to a different reader, scan the unlock link code. Using the 'new' reader' follow the directions outlined in the previous paragraph.

Lockout Link Mode



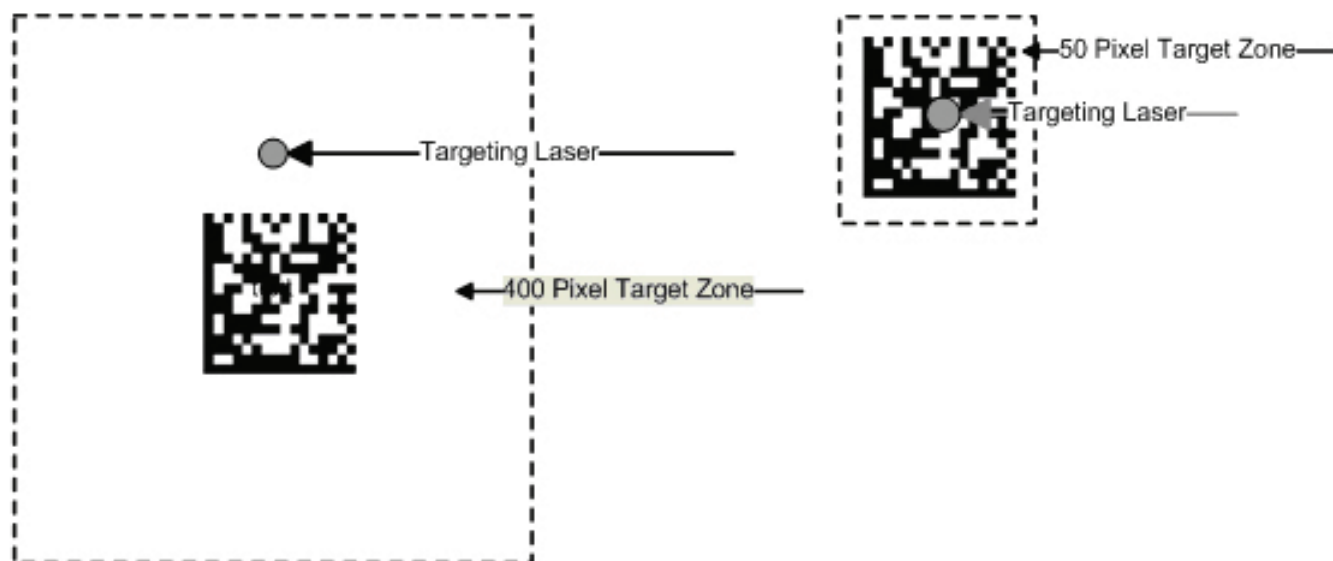
Unlock Link Mode



Chapter 5 - Advanced Decode Performance

5.1 - Set Targeting Tolerances

The targeting tolerance is the zone around the laser which is eligible for decoding. The values of each of the following codes are the percent tolerance based on the size of the barcode. As the targeting tolerance becomes smaller the targeting laser must be more centered in the symbol being read. Conversely, as the targeting tolerance gets larger there is less precision needed with the targeting laser. If there is more than one decodable code in the field of the, the symbol closest to the targeting laser will be decoded.



50 Most Accurate



M189_01

75



M190_01

100



M191_01

125



M192_01

150



M193_01

200



M195_01

400



M194_01

**1600 (Default)
Least Accurate**



M196_01

5.2 - Windowing

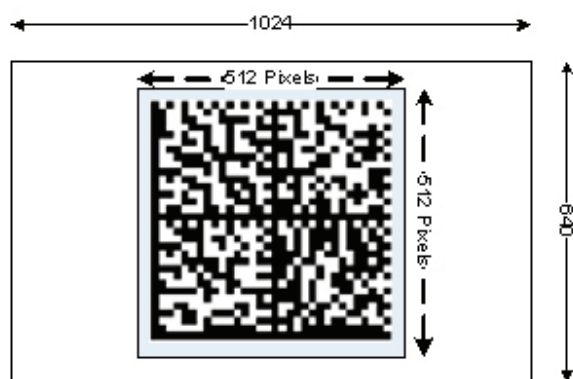
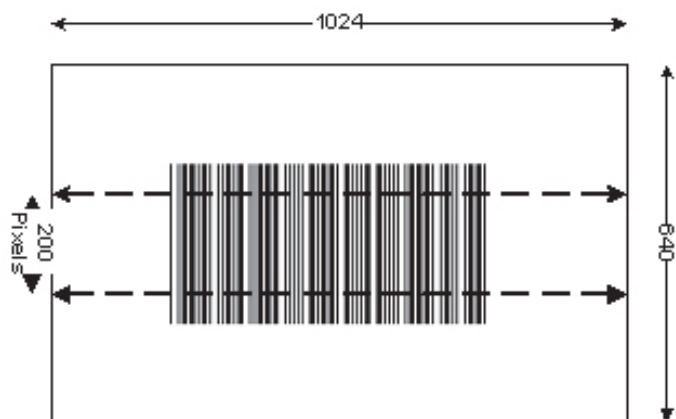
If only one size of bar code is being scanned in an application, the CR2 can be optimized to reduce processing time by adjusting the viewing area within the field of view of the image.

By reducing the vertical window value of the imager to 200 pixels, 1D codes are processed more quickly. Because only a horizontal strip of a 1D code is needed to be decoded, using a narrow strip of the imager is all that is needed. The area above and below the 200 pixels, which is always in the center of the imager, is ignored. This approach reduces the number of pixels that must be processed.

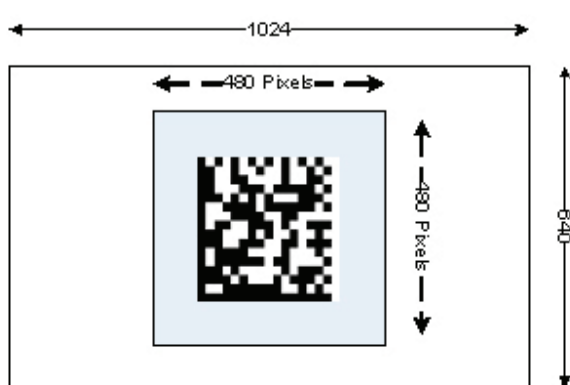
Windowing can also improve the processing time of 2D codes.

You may negatively impact reader performance if the window size is too small. If it is necessary to have the reader farther away than normal to read the code, the window may be too small.

Reading other types of codes, especially large codes, may be difficult while using this setting.



Medium Code Windowing



Small Code Windowing



Users may optimize the CR2 decode zone if their application only requires one bar code format. If the size and density of the bar codes to be scanned are consistent, please select the setting below that best describes your environment.

1-Dimensional Codes ONLY (1024 x 200 pixels)



M209_01

Caution: It may be more difficult to read other codes while in this setting. You must have the reader farther away than normal.

Small 2-Dimensional Codes (480 x 480 pixels)



M210_01

Medium 2-Dimensional Codes (512 x 512 pixels)



M211_01

Large 2-Dimensional Codes (640 x 640 pixels)



M212_01

Reset to Default Setting (1024 x 640 pixels)



M213_01

5.3 - Mirror Decoding

Scan the following codes to enable/disable the mirroring feature:

On



M182_01

Off (Default)



M181_02

Note: The Mirroring feature allows the CR2 to read codes as they are seen through a mirror (inversed 180°). If the Mirroring feature is enabled, non-mirrored reading ability will be disabled.



M188_02

Chapter 6 - Adding a Prefix or Suffix and Reader Text Commands



6.1 - Prefix Settings

If you scan the following codes, you will lose any unsaved settings. Make sure to save settings on your reader before scanning the prefix codes. If you scan more than one prefix you will receive each scanned prefix in your scanned data; (i.e., if you scan comma prefix twice, you will get two comma prefixes). Scan the following codes to set appropriate prefix:

Prefix - Comma



M159_02

Prefix - Space



M164_02

Prefix - Tab (Keyboard Mode)



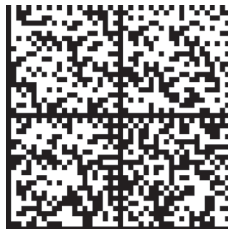
M166_01

Prefix - Tab (Serial)



M218_02

Prefix - Erase



M404_01

**Prefix - Carriage Return Line Feed
(Serial)**



M214_02

Note: If you require a special configuration, please contact Code at (801) 495-2200 or email appeng@codecorp.com.

6.2 - Suffix Settings

If you scan the following codes, you may lose your current settings. Make sure to save settings on your reader before scanning the Suffix codes. If you scan more than one suffix you will receive each scanned suffix in your scanned data; (i.e., if you scan comma suffix twice, you will get two comma suffixes). Scan the following codes to set appropriate suffix:

Suffix - Carriage Return (Serial)



M168_04

Suffix - Comma



M160_04

Suffix - Line Feed (Serial)



M169_04

**Suffix - Carriage Return
Line Feed (Serial)**



M170_04

Suffix - Space



M165_04

Suffix - Enter (Keyboard Mode)



M161_04

Suffix - Tab (Keyboard Mode)



M167_04

Suffix - Tab (Serial)



M219_04

Suffix - Erase



M405_02



Save Settings

M188_02

6.3 - Erase Prefix and Suffix Settings

Scan the following codes to erase all prefix and suffix data.

Erase Prefix & Suffix Data



M406_02

6.4 - Reader Text Commands

Enabling Reader Text Commands allows the CR2 to accept text commands via RS-232 or RF communication. Scan the following codes to enable/disable reader text commands:

Reader Text Commands On



M198_01

Reader Text Commands Off - Default



M197_02

Note: Text commands can only be sent to the reader when it is active. Refer to Reader-Host Interface Control Document for more information.



Save Settings

M188_02

Chapter 7 - CR2: Maintenance and Troubleshooting



7.1 - Reset Reader to Factory Defaults

Scan the following codes to reset reader:

Reset to USB Factory Default Settings



M049_03

Reset to PS/2 Factory Default Settings



M060_03

Reset to RS-232 Factory Default Settings



M418_02

Reset to RF One Way Factory Default Settings



M684_01

Bootloader Mode



M692_01

*Bootloader mode is
utilized to download new
version of bootloader
firmware.*

Clear All CodeXML Rules

Prefix & Suffix



M052_01

Clear All Stored Data



M071_01

Save Settings



M188_02

7.2 - General Safety Information

Repairs and Adjustments - Only those individuals authorized by Code should attempt to make repairs or adjustments to CR2 equipment. If the reader casing is opened the warranty is voided.

Power Supply - Use only the power supply provided for use with each specific unit when operating Code equipment.

Accessories - Only those accessories approved by Code (see page 3) should be utilized with Code equipment. Non-compliance with any of the above may result in:

- Injury to individuals handling the equipment;
- Damage to the equipment; and
- Voiding of the maintenance contract.

Lasers - The CR2 utilizes a laser **FOR TARGETING PURPOSES ONLY**. If the laser is activated, do not stare into the beam. See pg i for further information regarding laser warnings.

Lithium Ion Battery - Warning: Charge the battery with Code cables ONLY. Do not open battery, dispose of in fire, or short circuit - it may ignite, explode, leak, or get hot causing personal injury.



Save Settings

M188_02

7.3 - Warranty

Code Corporation's Code Reader 2.0 carries a three year limited warranty as described herein.

Customers may purchase a one or two year extension to this warranty. Please contact a Code representative for more information.

Limited Warranty

Code manufactures its hardware products in accordance with industry-standard practices. Code warrants its products will be free from defects in materials and workmanship, provided that the products are used under normal operating condition intended by the Manufacturer. This warranty is provided to the original owner only and is not transferable to any third party. This warranty is subject to any and all accompanying disclaimers, limitations and other terms of this section.

Terms of Warranty

Products with serial numbers, such as but not limited to CR2 reader units, radios, CodeXML modems, battery chargers, stands and power supplies are warranted for three years from date of shipment. Batteries and battery handles carry a two year warranty, or until battery capacity after recharge is less than sixty percent of new, whichever is shortest. Non-serialized items, such as but not limited to handles and cables, carry a 90-day limited warranty.

Exclusions

No warranty herein contained or set out shall apply to any product (i) which has been repaired, altered or tampered with unless done or approved by Code, (ii) which has not been maintained in accordance with any operating or handling instructions supplied by Code, (iii) which has been subjected to unusual physical or electrical stress, immersion in fluids, puncture, crushing, misuse, abuse, power shortage, improper power supply such as incorrect voltage or wrong polarity, negligence or accident, or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of the customer and is not covered under this warranty.

Warranty Coverage and Procedure

During the warranty period, Code will repair or replace defective products returned to Code's service center in the US. For worldwide warranty service call Code Warranty Support at 1-801-495-2200.

If warranty service is required, Code will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, with shipping and insurance charges prepaid. Code will pay for shipping and insurance of repaired or replacement products worldwide. Code will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for any pre-shipped replacement product in case it does not return the replaced product to Code within 7 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Code's Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof. Repair or replacement of a product during warranty will not extend the original warranty term. Code's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

General



EXCEPT FOR THE WARRANTIES STATED ABOVE, CODE DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, ON PRODUCTS FURNISHED HEREUNDER, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. The stated express warranties are in lieu of all obligations or liabilities on part of Code for damages, including without limitation, special, indirect, or consequential damages arising out of or in connection with the use or performance of the product. Seller's liability for damages to buyer or others (regardless of the form of action, whether by contract, warranty, tort, malpractice, and/or otherwise) resulting from the use of any product, shall in no way exceed the purchase price of said product. In no event shall Code be liable for any consequential, special, indirect, incidental or punitive damages, or for any loss of profits, revenue or data, even if Code has been advised of the possibility thereof.

7.4 - CR2 Accessories

Please visit www.codecorp.com for more information on Code accessories.

7.5 - Frequently Asked Questions

For a complete list of Frequently Asked Questions, please visit: <http://www.codecorp.com/faq.htm>

7.6 - CR2 Maintenance

The CR2 device operates efficiently and reliably and needs only a minimum of maintenance to operate. A few tips are given below for maintenance suggestions.

Cleaning the CR2 Window

The CR2 window should be clean to allow the best performance of the device. The window is the clear plastic piece inside the head of the reader. Do not touch the window. Your CR2 uses CMOS technology that is much like a digital camera. A dirty window may stop the CR2 from reading codes.

If the window becomes dirty, clean it with a soft, non-abrasive cloth or a facial tissue (no lotions or additives) that has been moistened with water. A mild detergent may be used to clean the window, but the window should be wiped with a water moistened cloth or tissue after using the detergent.

The CR2 display screen and housing may be cleaned in the same way.

For applications that require cleaning with disinfectant, please use products with the following ingredients:

- 1) Isopropyl Alcohol
- 2) Ethyl Alcohol (Denatured Grade)

Code does not recommend using bleach.

Technical Support and Returns

For returns or technical support call Code Technical Support at (801) 495-2200. For all returns Code will issue an RMA number which must be placed on the packing slip when the reader is returned.